

## Social movements in the digital age: A bibliometric analysis of strategies and structures in achieving social change

### *Gerakan sosial di era digital: Analisis bibliometrik strategi dan struktur dalam meraih perubahan sosial*

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#### Abstract

The digital era has significantly transformed how societies engage in social movements by introducing innovative tools and platforms. This study analyzes the role of non-social media digital technologies, such as blockchain, online petition platforms, and crowdfunding systems, in fostering inclusive and sustainable social movements. Using qualitative methods with bibliometric analysis, this research investigates the strategic and structural transformation of social movements in the digital age. The findings highlight that while blockchain offers transparency in fundraising and decision-making processes, platforms like Avaaz and Change.org enhance public participation and legitimacy in advocacy. Crowdfunding platforms provide financial solutions for overlooked social projects, and applications like Open311 strengthen citizen-government relationships. Despite these benefits, challenges such as slacktivism, misinformation, and algorithmic biases remain significant barriers. The study concludes by proposing a blended approach, integrating digital and traditional offline strategies, to achieve impactful and sustainable social change. This research contributes to the literature by exploring underexamined digital tools beyond social media, providing actionable recommendations for activists, policymakers, and technologists.

**Keywords:** digital activism; blockchain and crowdfunding; online petition; social movement

#### Abstract

Era digital telah mengubah secara signifikan bagaimana masyarakat terlibat dalam gerakan sosial dengan memperkenalkan alat dan platform yang inovatif. Penelitian ini menganalisis peran teknologi digital non-media sosial, seperti blockchain, platform petisi online, dan sistem urun dana, dalam mendorong gerakan sosial yang inklusif dan berkelanjutan. Dengan menggunakan metode kualitatif dengan analisis bibliometrik, penelitian ini menyelidiki transformasi strategis dan struktural gerakan sosial di era digital. Temuan ini menyoroti bahwa meskipun blockchain menawarkan transparansi dalam penggalangan dana dan proses pengambilan keputusan, platform seperti Avaaz dan Change.org meningkatkan partisipasi publik dan legitimasi dalam advokasi. Platform urun dana memberikan solusi keuangan untuk proyek-proyek sosial yang terabaikan, dan aplikasi seperti Open311 memperkuat hubungan antara warga dan pemerintah. Terlepas dari manfaat-manfaat tersebut, tantangan seperti slacktivism, kesalahan informasi, dan bias algoritmik tetap menjadi hambatan yang signifikan. Penelitian ini menyimpulkan dengan mengusulkan pendekatan campuran, yang mengintegrasikan strategi digital dan strategi offline tradisional, untuk mencapai perubahan sosial yang berdampak dan berkelanjutan. Penelitian ini berkontribusi pada literatur dengan mengeksplorasi alat digital yang belum banyak diteliti di luar media sosial, memberikan rekomendasi yang dapat ditindaklanjuti bagi para aktivis, pembuat kebijakan, dan ahli teknologi.

**Keywords:** aktivisme digital; blockchain dan crowdfunding; petisi online; gerakan sosial

## Introduction

In today's digital era, the development of information and communication technology has changed the way people interact, disseminate information, and organize social movements. Social movements have long been an integral part of society's efforts to drive social, political and economic change. From

street protests to lobbying institutions, social movements have always relied on collective mobilization strategies to achieve their goals. However, along with the development of digital technology, the way people voice their aspirations and build solidarity has undergone a significant transformation. In this context, digital technology is not only a communication tool, but also creates new spaces for social movements to organize and engage public participation.

Social relations are social processes, social patterns and social interactions. Thus, social change means variations of any social aspects, social patterns, interactions or social organization these are changes in the institutional structure and normative structure of society (Kovasic 2023). And then social media activists can participate by taking an active role in spreading a tweet so that it can become a trending topic. Although activism can be a form of slacktivism where protests are not proven to bring change, at least social media activists can raise issues to the surface and not just disappear. Thus, technology can encourage and increase the effectiveness of social movements (Azizah 2023).

Therefore, social media will continue to be relevant in disseminating information and mobilizing, with its new features constantly being updated, and its reach maximized. Ethical concerns arise, however, regarding its influence in relation to content moderation and potential bias. Globalization has been a driver of transnational movements, illustrating how social justice issues on one side of the world can be linked to issues on the other. Movements such as Fridays for Future and #MeToo show that this global connectivity can be a driver for collective action across borders toward a shared commitment to the solution of pressing global challenges (Aryal 2023). Social movements in the digital age leverage innovative technologies and the Internet to broaden their social base, organize virtual interactions, and mobilize participants, forming complex network structures that facilitate communication and institutionalization, ultimately aiming for social change and addressing social problems (Skobelina et al. 2020).

Social media, then, serves as a tool for social movements, facilitating communication and organization. However, impactful change requires offline activities and traditional organizations to foster solidarity and spirituality, essential for deep collective movements aimed at the common good (Febrianto & Martinus 2022). Historically, social movements are collective efforts to achieve social change, whether through protests, advocacy, or other campaigns. However, in the digital age, this traditional approach is changing. The use of digital technology allows activists to overcome various physical and geographical limitations, accelerate information dissemination, and increase public participation. As such, digital technology opens up opportunities for social movements to become more inclusive and participatory, involving communities that were previously difficult to engage in the process of social change.

Digital media can be referred to as a space, and this space offers action-oriented features such as decentralized, temporary, and individual actions that challenge traditional concepts with collective actions. By understanding social movements as the process of communication formation, we can conduct a more in-depth analysis of strategies and structures aimed at achieving digital social change. (Kavada 2016). Social movements in the current digital era can utilize social media platforms such as Twitter and Facebook with the aim of increasing and gaining support. This strategy can increase mass public involvement, which facilitates social movements such as MeToo and Black Lives Matter that are effective in driving significant social change (Naik & Sharma 2022).

The urgency of this social movement research lies in understanding how social movements evolve in the digital age, particularly in terms of transforming strategies, structures, and their implications for the sustainability of social change in the future. Among the many social movements today, there are numerous challenges that pose threats to the success of these movements, such as slacktivism—passive and superficial participation—and the miscommunication of information, which can weaken or reduce collective solidarity. Social movements risk failing or losing momentum in achieving their goals without clear strategies and adequate technology. This research also offers new insights into digital tools. For example, technologies like blockchain can be used to create transparency in fundraising or for the democratic participatory processes of social movements.

The digital movement can be characterized as a form of collective action for politics and as a movement that can utilize online platforms for activism. Understanding the significance of this movement is crucial within the context of surveillance capitalism, particularly in the struggle for power in the digital realm. By emphasizing the importance of analyzing the dynamics of digital movements, we can go beyond mere hashtags on Twitter, acknowledging the complexity and challenges inherent in this mediated space, including phenomena such as freedom and broader implications for social demands (Smit 2020).

Social movements are defined by the involvement of contemporary activists who use digital media for organization and mobilization. These movements also feature connective actions, with individuals creating personal content and connecting with others online. The shift from collective action to connective action strengthens flexible and targeted participation, enabling activists to create collective identities and narratives through digital memory. The role of social media platforms is crucial in shaping this movement, influencing perceptions and engagement with past events and injustices (Carty 2022).

Nowadays, social movements can refer to social media movements that utilize digital media to facilitate communication, mobilization, and collective coordination. This article discusses the extent to which digital-based media allows individuals to express their identities by utilizing adaptive and flexibly coordinated discourse through active communication networks. The significant influence of digital media on the personalization of political content and social dynamics in the digital age is demonstrated by case studies such as Black Lives Matter and MeToo (Sulaiman 2024). Movements that utilize social media organizations (SMOs) and online activism are redefining political movements, increasing membership, explaining strategies, raising funds, and carrying out protests. Organizational tools for disseminating information and facilitating connected activism require a re-examination of traditional social movement mobilization strategies, namely electronic protests and electronic activism, which demonstrate the important role of the Internet (Carty & Reynoso Barron 2019).

Another study by Pandey (2024) discusses consumer movements in the context of digital transformation, highlighting how digital technologies are changing the dynamics of these movements. It identifies three phases: digitization, digitalization, and digital transformation. In these phases, power dynamics shift from activist organizers to consumer discourse, and finally to unpredictable forces of social change. This evolution illustrates how digital movements are increasingly shaped by consumer engagement and the broader implications of technology on social activism (Pandey 2024).

Meanwhile, the digital movement itself refers to social movements that utilize digital media for organization, mobilization, and public engagement. Over the past 30 years, these movements have grown significantly, especially with the rise of social media. Initially, during the pre-social media era, activists used websites and email lists to disseminate information and coordinate actions. The rise of social media further increased grassroots autonomy, enabling real-time communication and broader participation, although it also introduced challenges related to proprietary platforms and surveillance (Carty & Reynoso Barron 2019).

In the case of gender equality, for example, the digital movement is also able to accommodate social movements, particularly in the context of women's activism, utilize electronic communication tools to encourage community engagement and advocacy. One highlight is the #SingleMotherFight campaign on Instagram, where the discourse in the comments section revealed themes such as trust-based gender oppression, gender relations in childcare, justice for victims of gender-based violence, and discrimination against single mothers. These themes illustrate how digital activism serves as a platform for women to voice their concerns and mobilize support for social change (Dwityas et al. 2023).

From the discussion on the digital movement, Kavada (2022) states that the definition of a social movement is a contemporary movement that strives for digital connectivity in the struggle for change, justice, and equality. The study also highlights how quickly information spreads through global networks, which can assist activists in building support and disseminating their messages effectively

and swiftly. This research examines the content and participant reviews using qualitative methods to study the movement and explore its background and history, revealing how connectivity is transforming activism in the pursuit of social change (Kavada 2022).

Research conducted by Holgado-Ruiz et al. (2021) shows that digital movements are social movements that involve digital technology and are better at organizing, communicating, and gathering support. This article also shows the extent to which activists have utilized various communication tools throughout history. The use of these tools has evolved into the contemporary digital revolution, which provides new services for activism. Essentially, the dynamics of social movements in the digital age are shaped by these advancements, which facilitate participation and the sharing of information. The power of communication to drive social movements is accompanied by the use of digital technology at a rapid pace (Holgado-Ruiz et al. 2021).

The proposed research update emphasizes the importance of exploring non-social media digital technologies to support more inclusive and sustainable social movements. This research brings a new angle by focusing on digital tools such as blockchain, online petition platforms, and crowdfunding systems, which are still rarely discussed in previous literature. Additional points on non-social media digital technologies have been included, including examples of platforms such as Change.org and the Open311 app that are relevant to the context of social movements. Academic studies specifically examining the impact of non-social media digital technologies reveal a significant gap in the current literature, especially in the context of developing robust and resilient social media strategies. Therefore, this study aims to analyze the contribution of non-social media technologies to the transformation of social structures and strategies in the digital era.

Although social media has been widely regarded as a key tool in digital activities, attention to platforms such as Facebook, Instagram, and Twitter has only highlighted a few important aspects of other digital technologies that have significant potential. Research on non-social media technologies such as blockchain, crowdfunding, brave platforms, and participatory applications such as Open311 is important because they provide solutions to many digital social media-based problems, such as transparency, accountability, and meaningful participation. These technologies have structural advantages not found in social media, such as blockchain's ability to record transactions transparently and irreversibly and its boldness in fostering collective action through digital democratic mechanisms. Therefore, it is important to use a critical thinking lens to evaluate non-social media technologies as potential alternative strategies to foster more inclusive, open, and honest social interactions.

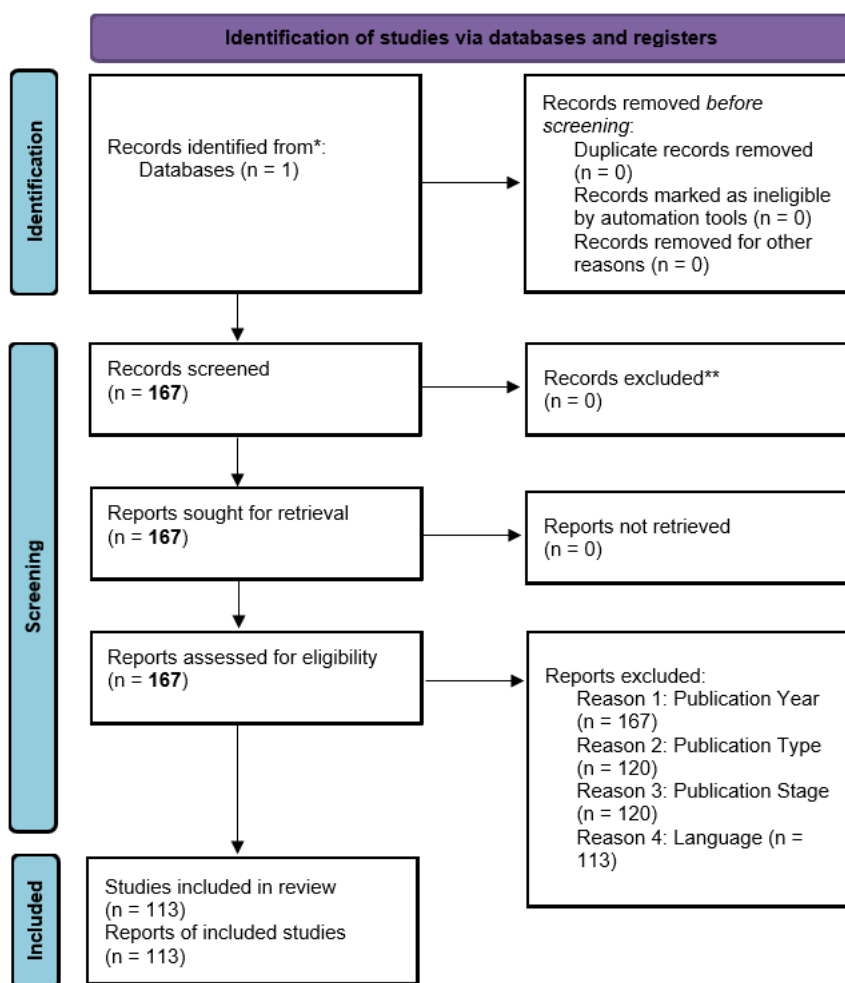
This research aims to analyze the transformation of social movement strategies and structures in the digital era. In addition, this research also explores the role of digital tools beyond social media, such as online petition platforms, blockchain technology. Through this approach, this research is expected to formulate evidence-based strategic recommendations relevant to activists, policymakers, and technology developers to support social movements that are more inclusive, sustainable, and effective in creating social change.

## Research Method

The method used in this research is a type of qualitative research with literature studies. Qualitative method is a method with literature study techniques with a perspective study to understand the phenomenon of what is experienced by the research subject, for example behavior, perceptions, motivations, actions and others, holistically and by means of descriptions in the form of words and language, with data collection techniques based on searching for written data such as books, papers or articles, journals and others. Qualitative research is a research method that focuses on an in-depth understanding of social phenomena through the analysis of non-numerical data such as text, images, and observations. VOSviewer and Wordcloud are software that analyze and visualize the network of relationships between various elements in bibliometric data. With VOSviewer, users can identify hidden patterns in data sets

and explore the relationships between different topics or entities. This tool is especially useful for researchers and professionals who want to visually explore patterns and points in their data.

The qualitative method in this context is applied through a systematic literature review technique, which aims to understand social phenomena experienced by research subjects-such as behavior, perceptions, motivations, and actions-holistically and presented descriptively in the form of words and language. Data collection is done through searching various written sources such as books, articles, scientific journals, and other relevant publications. Qualitative research prioritizes in-depth understanding of a phenomenon through non-numerical analysis, making it suitable for studying complex social issues.



**Figure 1.**  
PRISMA chart  
Source: Created by author

To strengthen this approach, the research also applied bibliometric analysis using the Scopus database, as seen in Figure 1. Scopus was chosen because it is one of the largest and most reputable academic indexing platforms, so the literature analyzed has met international scientific standards. This increases the reliability and credibility of the research findings. Articles indexed by Scopus tend to come from journals with high quality standards, which can increase the credibility of the research. By using the keywords "Digital Activism" and "Social movement" researchers obtained 167 articles; then filtering was done on the year (2019-2025), language (English), publication stage (final), document type (article), source type (journal), resulting in a final total of 113 journal articles to be included in the analysis. (TITLE-ABS-KEY ("digital activism") AND TITLE-ABS-KEY ("social movement")) AND PUBYEAR > 2019 AND PUBYEAR < 2026 AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (LANGUAGE, "English")).



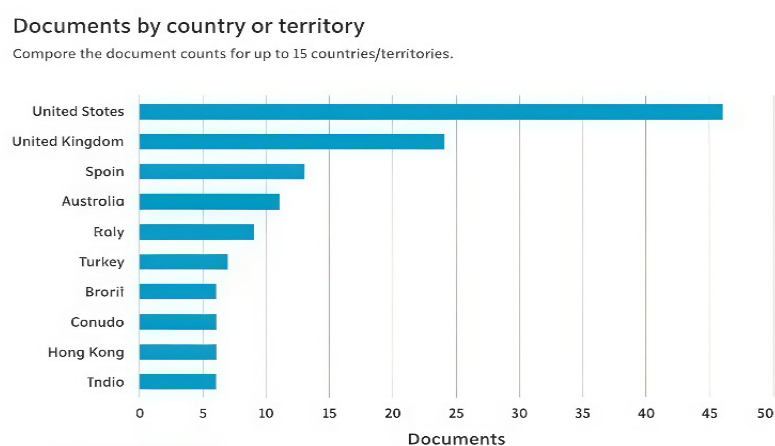
## Results and Discussion

The transformation of social movements in the digital age signifies a fundamental shift, which is not only evident in the methodologies used, but also in the conceptual frameworks and structural designs employed. The findings of this research show that, despite the importance of social media platforms such as Twitter and Facebook in raising awareness, there have been developments in digital technologies beyond social media, including blockchain, online petition platforms, and crowdfunding systems. Technological advancements have enabled more transparent, inclusive and sustainable participation, opening up new avenues for activism that go beyond traditional digital mobilization strategies.

Challenges such as slacktivism, misinformation, and algorithmic bias threaten the integrity of digital social movements amid optimism about current technological advances. The bibliometrix analysis conducted in this study shows that the absence of strategic integration of digital tools in the movement can result in the absence or loss of momentum and public trust. With this in mind, it is important to not only utilize the potential of social media but to develop hybrid models that integrate online and offline components to create meaningful and sustainable social impact.

### Transformation and potential of social movements in the digital era

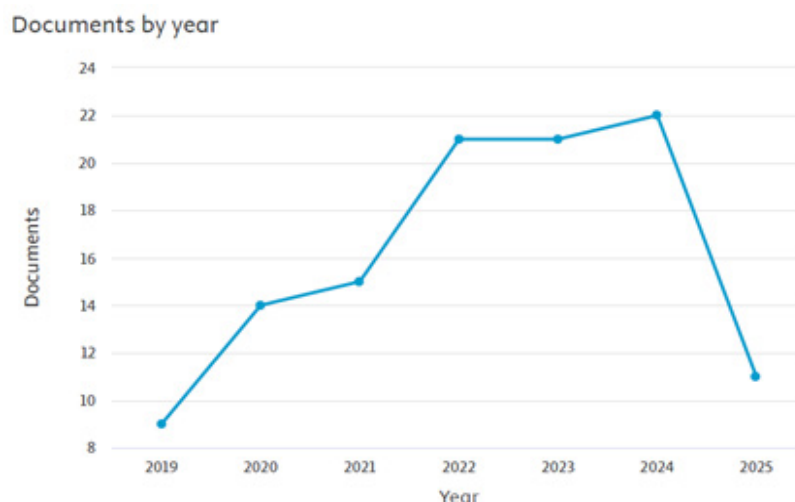
Using analyses from Vosviewer and Scopus, the figure shows the relationship between concepts or key points that are relevant to social movements in the digital age. In particular, concepts such as strategy, organisation and collective action are critical roles of strategy and constitute structural changes to support the success of social movements. By highlighting these relationships, the need for integrated strategies and effective collective action to address the challenges of digitalization is highlighted.



**Figure 2.**  
Scopus documents by country  
Source: Scopus with data filtering from 2019-2025

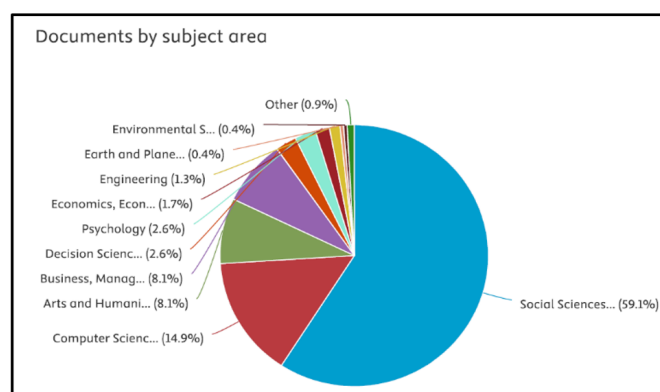
Figure 2 presents the distribution of subject research areas based on data from Scopus. Each subject area is represented by a bar with a length that reflects the number of publications in that area. The horizontal bar chart shows the comparison of the number of documents by country or region. According to the chart, the country with the most documents is the United States, with about 47 documents; the United Kingdom has about 25 documents, and the countries with fewer documents are Spain, Australia, and Italy. Countries with relatively low numbers of documents are Turkey, Brazil, Canada, Hong Kong, and India.

In this graph, English-speaking countries produce more documents than other countries. However, there are some errors in the spelling of country names. This may be due to input errors or the graph creation process. Overall, this graph shows the distribution of documents among countries, with a focus on each country's contribution to the total number of documents recorded.



**Figure 3.**  
Scopus documents by year  
Source: Scopus with data filtering from 2019-2025

Figure 3 shows the distribution of research or publications per year, with a trend indicating a significant increase in the last decade. The figure also shows that topics such as digitization, sustainability, and technology are gaining increasing attention in academic research. The increase in research shows the urgency and relevance of new topics in this era, especially topics related to global pressure to implement environmentally friendly technology. From the journal search column on the Scopus website, I was able to obtain data in the form of a diagram showing the research that has been conducted over the years with the highest number of studies. Figure 3 shows the research and data obtained from 2019 to 2025.

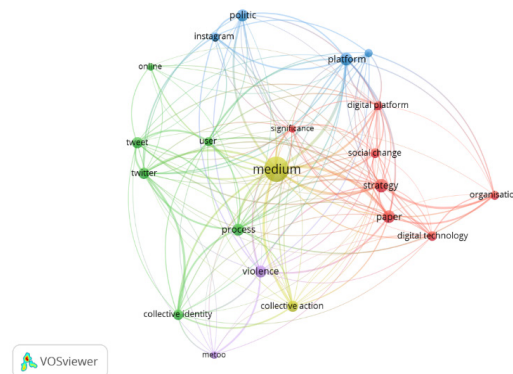


**Figure 4.**  
Scopus documents by subject area  
Source: Scopus with data filtering from 2019-2025

From the diagram or graph, it can be concluded that specific peak points related to technological developments or global events can be analyzed. For example, the image shows a spike in publications in a certain year, indicating a response to global agendas such as the Sustainable Development Goals (SDGs) or the topic of the 4.0 industrial revolution. Therefore, this analysis provides an important basis for understanding academic evolution in the context of global digitalization.

Figure 4 shows the distribution of research fields based on the Scopus website. Each field of study is represented by a bar indicating the number of publications in that field. Examples such as "Engineering," "Computer Science," and "Environmental Science" stand out as key areas for relevant research. This indicates that fields studying digitalization and sustainability encompass various topics and involve information and its impact on the environment (Kaul et al. 2023).

This field also highlights global attention to the use of technology in addressing sustainability challenges. More specific fields such as “Social Sciences” or “Decision Making” provide additional insights into how technology is not only necessary for technical needs but also for influencing social and economic decision-making.



**Figure 5.**

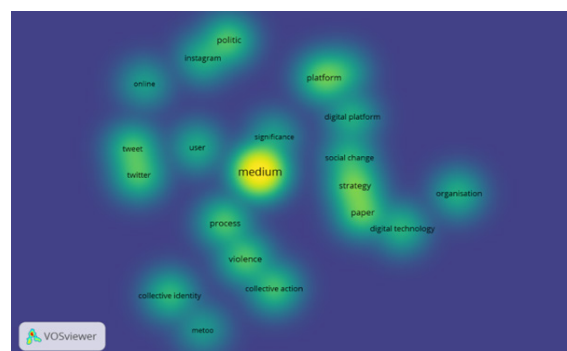
Network visualization

Source: Vosviewer analysis of Scopus data from 2019-2025

In addition, Figure 5 points out that digital platforms and technologies reflect the potential of digital tools beyond social media to support social movement activities. This is relevant for the exploration of tools such as online petition platforms and blockchain technology, which have not been widely discussed in the literature. Therefore, the research gap that arises from the lack of attention to these innovative tools provides room to expand related studies. The relationship between digital technologies and their impact on social change is demonstrated by points such as social change and meaning. These connections suggest that, if used strategically, digital technologies have great potential to generate more inclusive and sustainable change (Ikhsan et al. 2021). Challenges like these can hinder digital social movements.

Figure 6 displays a density visualization that presents the intensity connections between key concepts related to the theme of strategic transformation and social movement structures in this digital era. The “media” nodes located at the center of the high density area illustrate the important role of media as a key driver in communication, driving collectivity and organizing collective action in digital social movements. This shows that the media not only functions as a channel for information dissemination but also has a strategic role in fighting for social change.

The progress of social movements and sustainability is supported by the use of very important digital tools such as digital platforms, namely “online technology” and “social change,” as demonstrated by this large population. Therefore, research is needed to discuss the functions of unconventional technologies such as online petition platforms and blockchain, which have great potential to increase the transparency of social movement organizations’ performance.



**Figure 6.**

Density visualization

Source: Vosviewer analysis of Scopus data from 2019-2025



[illegible]

Figure 7 shows a word cloud focusing on keywords related to social movements and digital media. The dominance of the phrase “social media” shows the importance of digital platforms as a key tool in strengthening social movements in the modern era. Words such as “activism,” “collective action,” and “Twitter” show that digital technology is necessary for building mass support, solidarity, and influencing public opinion.

The use of digital tools such as online petition platforms and blockchain technology can expand the impact of social movements without social media. For example, blockchain technology has the potential to enhance transparency when raising funds for social movements, and platforms like online petitions make it easier for the public to participate in decision-making processes or advocacy (Jaroucheh et al. 2020). To achieve goals such as social change, there needs to be an evidence-based approach that identifies social media or other digital tools that can generate the best recommendations in supporting inclusive, sustainable, and effective social movements (Zichichi et al. 2019).

This research provides new knowledge by making the focus from social media platforms to no-social media-based technologies that can be strategic and sustainable to support social change in a transparent and clear manner. This important approach can overcome challenges in the digital era such as the spread of invalid or false information (disinformation), symbolic participation without real impact (slacktivism) and the destruction of solidarity shown in the movement with social media.

A study conducted by Collins et al. (2021) found that, in advocating for stronger climate change policies at the UN, Avaaz managed to collect millions of signatures from around the world through an online petition platform. The significant potential of digital technologies without social media to expand public participation and increase the legitimacy of social advocacy shows great success in the use of non-social media digital technologies. In addition, a study by (Bernards et al. 2022) showed that blockchain technology is already being used in Global Forest Watch to record donations transparently, thereby increasing public trust in public initiatives that use this technology. Transparency can create a more inclusive and accountable environment through traditional approaches.

### **New avenues to support the organization, mobilization, and coordination of collective action**

Blockchain technology and digital platforms have paved the way for digital social movements to support organization, mobilization, and coordination of collective action. This technology enables increased transparency, accountability, and public participation in social movements in addressing issues that often arise in social media-based movements.

#### *Blockchain technology in digital social movements*

Blockchain can provide significant benefits for digital social movements. This is because blockchain ensures transparency in fundraising and donation tracking. Currently, technology supporting decentralized record-keeping allows every transaction to be permanently recorded and accessible to all parties involved. This small innovation drastically reduces misuse of funds because, once funds are disbursed, they are recorded, people become more confident, and thus participation from various communities increases.

For example, platforms like Global Forest Watch have used blockchain to transparently calculate donations for environmental protection campaigns. This makes the initiative more trusted by the public because it now has legitimacy. Additionally, another use of blockchain is to create a consensus-based decision-making system within social movements, ensuring all participants have greater inclusivity and representation.

#### *Non-social media digital platforms*

Digital social movements also utilize non-social media digital platforms such as participatory apps, crowdfunding, and e-petitions. Millions of signatures have been collected by platforms such as Avaaz to influence global policy, particularly on climate change. This success demonstrates the enormous potential of e-petition platforms to pressure policymakers and increase public participation.

Crowdfunding platforms such as Kickstarter and GoFundMe have greatly helped social movements raise funds by presenting compelling stories to attract donors. However, the success of crowdfunding depends heavily on the trustworthiness and transparency of the platform, which is supported by blockchain technology. Other non-social media digital technology applications such as the Open311 application for managing public complaints can be used to improve the relationship between the public and the government. This application can strengthen the relationship between the government and its transparency and accountability features. However, in some communities this is less effective due to limitations or lack of digital literacy.

#### *Social movement challenges in the digital age*

Technological advancements that have helped social movements for various things still have some challenges or problems. One example is slacktivism, where people sometimes do simple actions such as spreading hashtags but without the intention to bring about big changes and without clear evidence or goals. Disinformation or misinformation can also be an important issue and can undermine collective

commitment and make social movements less credible. There is also a need for more inclusive strategies and diversification of digital tools to reduce dependency on platforms that are perceived to be more dominant. However, the monopolization of platforms by large corporations can risk increasing collective surveillance and algorithmic biases that can affect how visible and effective social movements are.

*Emphasis on non-social media digital social movements*

Research has extensively studied Twitter, Facebook and Instagram as key platforms for mass mobilization and information sharing but non-social media technologies present unexplored opportunities. Blockchain technology enables transparent collective decision-making and online petition platforms enable all participants to join the process.

The research combines two related sub-topics about transformation and new digital social movement opportunities and demonstrates the necessity of evidence-based methods when studying non-social media technology potential for sustaining social movements. Social movements achieve better results in their pursuit of substantial social change through the strategic combination of different digital tools.

The use of blockchain technology enables social organizations to build transparent audit systems which resolve data transmission trust problems. The technology helps decrease corruption and boost donor participation in international projects like environmental protection but needs robust infrastructure and community involvement (Ilten & McInerney 2019). The combination of technological accessibility with emotional communication strategies on Avaaz platforms has produced multiple environmental benefits that drive substantial financial success (Collins et al. 2021).

For local companies providing solutions for social initiatives typically funded by leading financial institutions, crowdfunding has become an essential tool. Its success depends on trust and the strength of the campaign narrative created through digital platforms (Ilten & McInerney 2019). Additionally, e-petitions have emerged as a vital tool for enhancing local democratic participation, especially when combined with demonstrations. This underscores the importance of integrating conventional and digital engagement to drive legal change (Aparecida & Do Carmo 2024).

Open311, an open-source platform that improves communication between government and citizens, demonstrates efficiency in public complaint management and strengthens government-community relations through transparency. However, challenges such as low digital literacy and lack of user training limit its effectiveness, so digital education and technological infrastructure development are needed to support wider adoption (Nam 2016). Blockchain also has the potential to support sustainable development goals by expanding social participation and improving equity through data transparency, especially in developing countries (Zwitter & Hazenberg 2020).

In global campaigns, blockchain can reduce bureaucratic barriers and strengthen cross-border collaboration, particularly on climate change issues, although its success remains dependent on trust-building and cross-cultural training (Tapscott & Tapscott 2016). Transparent data help social organizations understand mobilization patterns and improve the effectiveness of their strategies, especially in big data-driven movements (González-Bailón 2017). However, the lack of physical interaction in digital social movements can weaken emotional solidarity, so a balance between digital connectedness and in-person relationships is needed to strengthen social movements (Kavada 2016).

Digital tools have been effective in mobilizing the masses and breaking the dominance of traditional media, enabling pressure on governments, although digital action still requires the support of offline action to produce significant structural change (Chiliquinga-Amaya 2020). Digital activism, including the phenomenon of "online firestorms" and cross-movement coalitions on social media, is effective in countering disinformation and driving platform policy change, although it requires careful strategy and coordination to succeed (Li 2022).

The transformation of digital activism in the era of surveillance capitalism shows how technology is changing patterns of social struggle through mass mobilization, issue visualization, and cross-movement collaboration, despite facing challenges such as mass surveillance and monopolization of digital platforms (Vargas 2024). The adaptation of technology, such as digital applications, increases citizen participation in local decision-making and promotes inclusive governance, but its effectiveness requires an approach that can be adapted to the characteristics of local communities (Arnstein 2019). Various challenges in the digital-based movement emphasize the importance of a clear organizational strategy to ensure coordination and sustainability, such as the lack of organizational structure (Freeman 2021).

## Conclusion

This study conducted a comprehensive bibliometric analysis using literature on digital social media with a focus on the use of non-social media technologies such as blockchain, crowdfunding platforms, and online petitions. From this bibliometric analysis, there is a growing awareness of alternative digital tools that can enhance transparency, inclusivity, and teamwork. New terms such as “strategic,” “organization,” “participation,” and “platform” as examples in network analysis highlight the importance of digital infrastructure in building the foundations of strategic and structural movements in society. From a scholarly perspective, this research helps identify important research questions by applying the lens of analysis from popular social media platforms to unexplored digital tools. This research contributes to the development of digital theory by demonstrating that social change can be accelerated through the use of participatory and decentralized technologies that provide greater transparency and legitimacy. The findings enrich academic understanding of how non-social media technologies can complement or even outperform traditional media in promoting destructive activities.

While non-social media technologies carry significant risks, successful implementation does not necessarily mean there are no problems. Issues such as digital literacy, infrastructure failures, and the need for contextualized implementation are numerous. In addition, there is a need to be cautious when promoting technologies as intrinsically emancipatory. For example, blockchain technology or petition platforms will only be effective if used in conjunction with human strategies and organizational ethics. Future research should therefore examine not only the capabilities of technologies but also the social and political conditions that influence their success or failure in practice. In summary, this research highlights the importance of hybrid activity models, which foster digital innovation through engaging mobilization, to ensure social change education that is inclusive, resilient, and remains grounded in addressing the evolving digital environment.

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